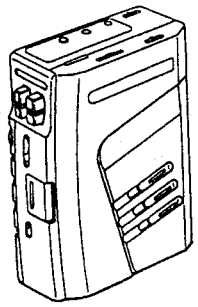
S/M Code No.89 – 081 DATE OF ISSUE 9/1989 – I

AIWA®

HS-J45
HS-J320

SERVICE MANUAL



STEREO RADIO CASSETTE RECORDER

• BASIC TAPE MECHANISM : α – 1 •TYPE. Y

SPECIFICATIONS

Frequency range:
FM: 87.5 — 108 MHz
AM: 530 — 1605 kHz

Maximum output:
20mW + 20mW (EIAJ/16Ω)
15mW + 15mW (EIAJ/32Ω)

Power source:
Battery DC 3V, R6P (LR6, SUM-3, AA) × 2
Domestic AC power (using AC adaptor)

Battery life:
Using manganese batteries (R6P, SUM-3, AA)
Approx. 2.5 hours (EIAJ recording mode)
Approx. 4 hours (EIAJ, 1 mW output, playback mode)
Using alkaline batteries (LR6, AM-3, AA)
Approx. 5 hours (EIAJ, recording mode)
Approx. 8 hours (EIAJ, 1 mW output, playback mode)

- Design and specifications are subject to change without notice.
- Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
- "Dolby", the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

AIWA Co., Ltd. Tokyo Japan

Printed in Japan

DISASSEMBLY INSTRUCTIONS

1. Operation Panel and Rear Cabinet Removal
   1) Remove 4 screws (Ⓐ x 3, Ⓑ x 1) and open the cassette lid, then remove the control panel in the direction of arrow ①. (See Figure 1)

   Note 1: The control panel is fitted to the rear cabinet by the hooks. It cannot be removed by pulling it straight up. Remove it gradually in the direction of arrow ① so as not to break the hooks.

   2) Remove 3 screws (Ⓐ' x 1, Ⓒ x 2) and release the hook (see the expanded figure), then remove the rear cabinet in the direction of arrow ②. (See Figure 1)

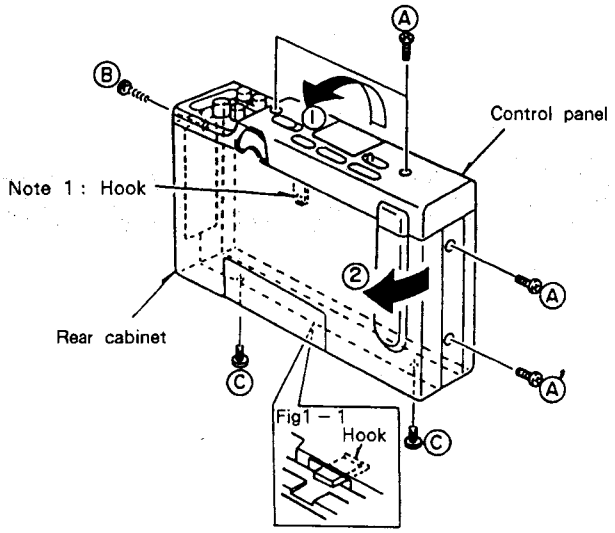


Fig-1

2. Main Circuit Board Removal
   1) Remove the cassette box.
   2) Remove 5 screws (Ⓓ x 2, Ⓔ x 2, Ⓕ x 1).
   3) Remove belt A2 and lift up the main circuit board and center frame together in the direction of the arrow. (See Figure 2)

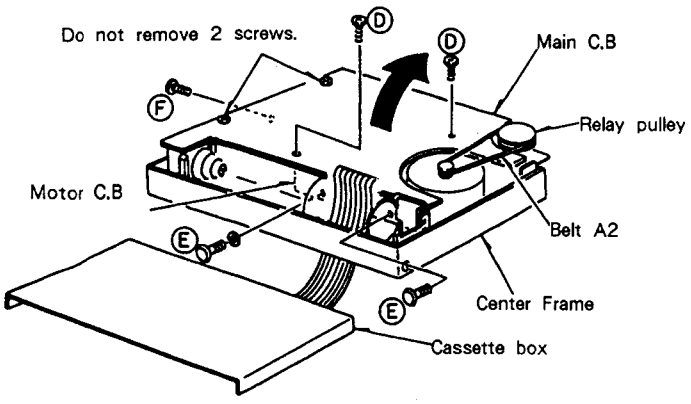


Fig-2

Note 1: Connect the circuit board and mechanism using a shorting clip, etc. for grounding during checking as shown in the figure. (See Figure 3)

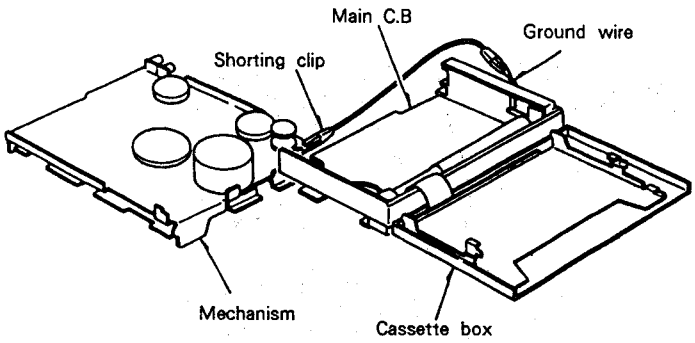
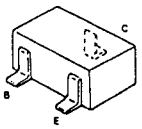
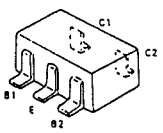


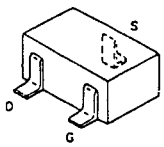
Fig-3



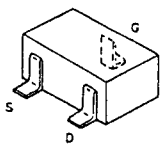
2SA1162
2SA1213
2SC2712
2SC2714
2SD1328
DTA114
DTC114
DTC143



FMG4
FMW1



2SK211



2SK209

ELECTRICAL MAIN PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
=== IC ===		
	87-001-351-019	IC,AN6612S
	87-001-147-019	IC,BA1102FS
	87-020-505-019	IC,CX20023
	87-001-371-019	IC,LA4533M
	87-020-447-019	IC,TA7373F
	87-001-370-019	IC,TA8109AF
	87-001-149-019	IC,TA8158F
	87-001-516-019	IC,TK11821
=== TRANSISTOR ===		
	89-502-095-019	FET,2SK209(GR)
	89-502-113-019	FET,2SK211 O
	89-112-134-019	TRANSISTOR,2SA1213Y
	89-327-124-019	TRANSISTOR,2SC2712(Y)
	89-327-143-019	TRANSISTOR,2SC2714 O
	89-413-284-019	TRANSISTOR,2SD1328 T
	87-026-233-019	TRANSISTOR,DTA114TK
	87-026-239-019	TRANSISTOR,DTC114TK
	87-026-224-019	TRANSISTOR,DTC143XK
	87-026-299-019	TRANSISTOR,FMG4
	87-026-298-019	TRANSISTOR,FMW1
=== DIODE ===		
	87-020-027-019	DIODE,1SS184
	87-020-339-019	DIODE,1SS226
=== MAIN CIRCUIT BOARD SECTION ===		
BPF1	★87-030-136-010	BPMB8L7.0
C1	★87-010-322-019	CAP,CHIP S 100P CH
C2	★87-010-198-019	CAP,CHIP 0.022
C4	★87-010-178-019	CAP,CHIP 1000P
C5	★87-010-322-019	CAP,CHIP S 100P CH
C6	★87-010-147-019	CAP,CHIP S 3P
C7	★87-010-197-019	CAP,CHIP 0.01DM
C8	★87-010-197-019	CAP,CHIP 0.01DM
C9	★87-010-322-019	CAP,CHIP S 100P CH
C10	★87-010-154-019	CAP,CHIP 10P
C12	★87-010-197-019	CAP,CHIP 0.01DM
C14	★87-010-187-019	CAP,CHIP 5600P
C15	★87-010-154-019	CAP,CHIP 10P
C16	★87-010-198-019	CAP,CHIP 0.022
C17	★87-010-198-019	CAP,CHIP 0.022
C18	★87-010-315-019	CAP,CHIP S 27P CH
C19	★87-010-197-019	CAP,CHIP 0.01DM
C20	★87-010-573-019	CAP,CHIP 390P UJ
C21	★87-012-141-019	CAP,CHIP S 0.22
C22	★87-010-198-019	CAP,CHIP 0.022
C23	★87-010-587-019	CAP,ELECT 100-2 GAS
C24	★87-010-497-019	CAP,ELECT 4.7-35 GAS
C26	★87-010-497-019	CAP,ELECT 4.7-35 GAS
C27	★87-012-140-019	CAP,CHIP S 470P CH
C28	★87-012-140-019	CAP,CHIP S 470P CH
C30	★87-010-184-019	CAP,CHIP 3300P
C31	★87-010-197-019	CAP,CHIP 0.01DM
C32	★87-010-197-019	CAP,CHIP 0.01DM
C33	★87-010-194-019	CAP,CHIP 0.047
C34	★87-010-194-019	CAP,CHIP 0.047
C35	★87-010-197-019	CAP,CHIP 0.01DM
C36	★87-010-196-019	CAP,CHIP 0.1
C37	★87-012-140-019	CAP,CHIP S 470P CH
C38	★87-012-140-019	CAP,CHIP S 470P CH
C39	★87-010-196-019	CAP,CHIP 0.1
C40	★87-010-194-019	CAP,CHIP 0.047
C41	★84-439-620-019	CAP,ELECT 470-4
C42	★87-012-158-019	CAP,CHIP 390P CH
C43	★87-010-335-019	CAP,CHIP 15P
C44	★87-010-196-019	CAP,CHIP 0.1
C45	★87-010-147-019	CAP,CHIP S 3P
C47	★87-010-335-019	CAP,CHIP 15P
C49	★87-012-141-019	CAP,CHIP S 0.22
C50	★87-010-503-019	CAP,ELECT 220-4 GAS
C51	★87-010-197-019	CAP,CHIP 0.01DM
C52	★87-010-197-019	CAP,CHIP 0.01DM
C53	★87-015-922-019	CAP,CHIP TANTALUM 0.1-35
C54	★87-015-922-019	CAP,CHIP TANTALUM 0.1-35
C55	★87-010-176-019	CAP,CHIP 680P
C56	★87-010-176-019	CAP,CHIP 680P
C57	★87-010-501-019	CAP,ELECT 47-4 GAS
C58	★87-010-587-019	CAP,ELECT 100-2 GAS
C59	★87-010-501-019	CAP,ELECT 47-4 GAS
C60	★87-010-501-019	CAP,ELECT 47-4 GAS
C61	★87-010-197-019	CAP,CHIP 0.01DM
C62	★87-010-197-019	CAP,CHIP 0.01DM
C63	★87-010-180-019	CAP,CHIP 1500P
C64	★87-010-180-019	CAP,CHIP 1500P
C65	★87-010-198-019	CAP,CHIP 0.022
C66	★87-010-198-019	CAP,CHIP 0.022
C67	★87-010-452-019	CAP,CHIP 1U
C68	★87-010-452-019	CAP,CHIP 1U
C69	★87-010-172-019	CAP,CHIP 330P
C70	★87-010-181-019	CAP,CHIP 1800P
C71	★87-010-090-019	CAP,TANTALUM 4.7U
C72	★87-010-197-019	CAP,CHIP 0.01DM
C73	★87-010-184-019	CAP,CHIP 3300P
C74	★87-010-198-019	CAP,CHIP 0.022
C75	★87-012-141-019	CAP,CHIP S 0.22
C76	★87-010-197-019	CAP,CHIP 0.01DM
C77	★87-010-498-019	CAP,ELECT 10-16
C78	★87-010-501-019	CAP,ELECT 47-4 GAS
C79	★87-010-503-019	CAP,ELECT 220-4 GAS
C80	★87-010-501-019	CAP,ELECT 47-4 GAS
C81	★87-010-498-019	CAP,ELECT 10-16
C82	★87-010-503-019	CAP,ELECT 220-4 GAS
C83	★87-010-452-019	CAP,CHIP 1U
C84	★87-010-452-019	CAP,CHIP 1U
C85	★87-010-452-019	CAP,CHIP 1U
C86	★87-010-452-019	CAP,CHIP 1U
C87	★87-010-178-019	CAP,CHIP 1000P
C88	★87-010-178-019	CAP,CHIP 1000P
C89	★87-010-178-019	CAP,CHIP 1000P
C90	★87-010-178-019	CAP,CHIP 1000P
C91	★87-010-193-019	CAP,CHIP 0.033
C92	★87-010-193-019	CAP,CHIP 0.033
C93	★87-010-186-019	CAP,CHIP 4700P
C94	★87-010-186-019	CAP,CHIP 4700P
C95	★87-010-497-019	CAP,ELECT 4.7-35 GAS
C96	★87-010-497-019	CAP,ELECT 4.7-35 GAS
C97	★87-010-197-019	CAP,CHIP 0.01DM
C98	★87-010-197-019	CAP,CHIP 0.01DM
C99	★87-010-193-019	CAP,CHIP 0.033
C100	★87-010-193-019	CAP,CHIP 0.033
C101	★87-010-196-019	CAP,CHIP 0.1
C102	★87-010-196-019	CAP,CHIP 0.1
C103	★87-010-587-019	CAP,ELECT 100-2 GAS
C104	★87-010-499-019	CAP,ELECT 22-6.3 GAS
C105	★87-010-588-019	CAP,ELECT 220-2 GAS
C106	★87-010-588-019	CAP,ELECT 220-2 GAS
C107	★87-012-141-019	CAP,CHIP S 0.22
C108	★87-012-141-019	CAP,CHIP S 0.22
C109	★87-010-422-019	CAP,CHIP 22-4
C110	★87-010-503-019	CAP,ELECT 220-4 GAS
C111	★87-010-497-019	CAP,ELECT 4.7-35 GAS
C112	★87-010-452-019	CAP,CHIP 1U
C113	★87-010-197-019	CAP,CHIP 0.01DM
C114	★87-010-452-019	CAP,CHIP 1U
C115	★87-010-452-019	CAP,CHIP 1U
C116	★87-015-934-019	CAP,CHIP TANTALUM 2.2-4
C117	★87-010-180-019	CAP,CHIP 1000P
C118	★87-010-503-019	CAP,ELECT 220-4 GAS
C119	★87-010-452-019	CAP,CHIP 1U
C121	★87-010-198-019	CAP,CHIP 0.022
C122	★87-010-318-019	CAP,CHIP 47P CH
C123	★87-010-318-019	CAP,CHIP 47P CH
C124	★87-010-318-019	CAP,CHIP 47P CH
C126	★84-439-620-019	CAP,ELECT 470-4
C128	★87-010-170-019	CAP,CHIP 220P
C130	★87-010-167-019	CAP,CHIP 120P SL
CF1	★87-008-387-019	FILTER CERAMIC MA5W-A
CF2	★87-008-387-019	FILTER CERAMIC MA5W-A
CF3	★87-008-424-019	FILTER FMBF468
CP1	87-001-367-019	PHOTO SPI-315(O)CD
D1	87-026-359-019	DIODE VARICAP KV1410
D2	87-026-359-019	DIODE VARICAP KV1410
D3	87-026-435-019	DIODE VARICAP KV1560
D8	87-020-743-019	DIODE VARICAP MA341B TX
J1	87-049-767-010	JACK 3.5 TERM(MIC)
J2	87-049-861-019	JACK 3.5ST 2.5MM BK(PHONES)
J3	87-009-022-019	JACK DC LONG(DC-3V)
L1	★87-005-278-019	COIL 0.22UH
L2	★84-524-605-019	COIL RF FM
L3	★84-524-606-019	COIL OSC FM
L4	★87-008-353-019	IFT FM
L6	★87-008-373-019	IFT MW
L7	★87-008-307-019	COIL QUAD-P (N)
L8	★87-007-261-019	COIL OSC AM
L9	★84-438-612-010	COIL BIAS OSC
L10	★87-003-089-019	CHOKE COIL 47UH
L11	★87-005-402-019	COIL 120UH
L12	★84-468-617-019	COIL ANT
LED1	87-020-520-019	LED TLR-226(OPE/BATT)
S2	87-036-127-019	SLIDE SW(FUNCTION)
S3	87-036-082-010	SLIDE SW(REC/PB)
S4	87-031-816-019	SLIDE SW(DOLBY/FM MODE)
S5	87-031-816-019	SLIDE SW(PAUSE)
S6	87-031-816-019	SLIDE SW(TAPE)
S8	87-036-083-019	PUSH SW(POWER)
SFR1	★87-024-079-010	SFR 5K
SFR2	★87-024-079-010	SFR 5K
SFR3	★87-024-120-010	SFR 10K
TC1	★87-011-189-019	CAP,CHIP TRIMMER CTZ-10A
TC2	★87-011-189-019	CAP,CHIP TRIMMER CTZ-10A
TC3	★87-011-189-019	CAP,CHIP TRIMMER CTZ-10A
TC4	★87-011-189-019	CAP,CHIP TRIMMER CTZ-10A
VR1	87-024-123-019	VOLUME,20KA(VOLUME)
=== CONTROL CIRCUIT BOARD SECTION ===		
C211	★87-010-452-019	CAP,CHIP 1U
C212	★87-010-452-019	CAP,CHIP 1U
C213	★87-010-154-019	CAP,CHIP 10P
C214	★87-010-321-019	CAP,CHIP 82P CH
C215	★87-010-196-019	CAP,CHIP 0.1
C216	★87-010-243-010	CAP,CHIP TANTALUM 10-4
L201	★87-007-249-019	COIL,DC-DC B
L202	★87-003-227-019	COIL 120UH
S1	87-031-988-019	SLIDE SW(BAND)
SFR201	87-024-231-010	SFR 20K
VR2	84-524-205-019	VOLUME(TUNING)
=== MOTOR CIRCUIT BOARD SECTION ===		
C301	★87-015-933-019	CAP,CHIP TANTALUM 1-10
C302	★87-015-933-019	CAP,CHIP TANTALUM 1-10
C303	★87-015-934-019	CAP,CHIP TANTALUM 2.2-4
R302	★87-026-256-010	THERMISTOR 100
R307	★87-022-042-019	RES,CHIP MF 0.51 1/8W
SFR301	★87-024-076-010	SFR 1K
=== G.EQ CIRCUIT BOARD SECTION ===		
PCB-D	★84-479-601-019	G.EQ CIRCUIT BOARD
=== HEAD CIRCUIT BOARD SECTION ===		
PCB-E	84-468-615-010	HEAD CIRCUIT BOARD
RPH	84-468-616-019	RPH ASSY(W/PCB-E)
S7	86-541-602-019	SLIDE SW(DIRECTION)
=== MISCELLANEOUS ===		
EH	★86-541-601-010	EH HEAD
L5	★84-468-620-019	COIL,BAR ANT
M1	87-045-295-010	MOTOR,HKN-3A3LA

○チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち
Chip resistor part coding

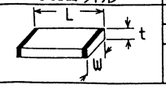
88 - □□□ - □□□

A
抵抗コード
Resistor code

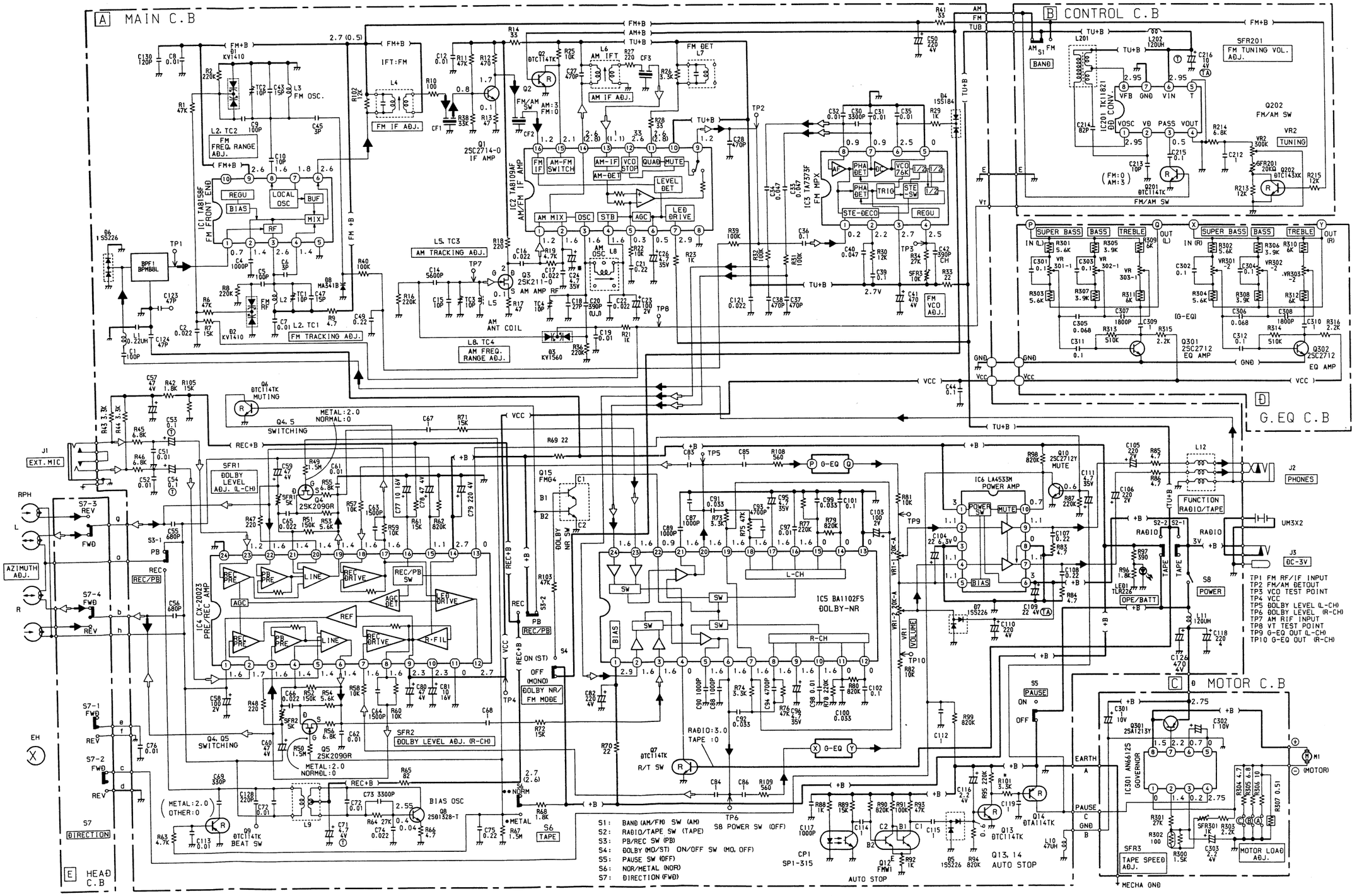
桁表示
Figure

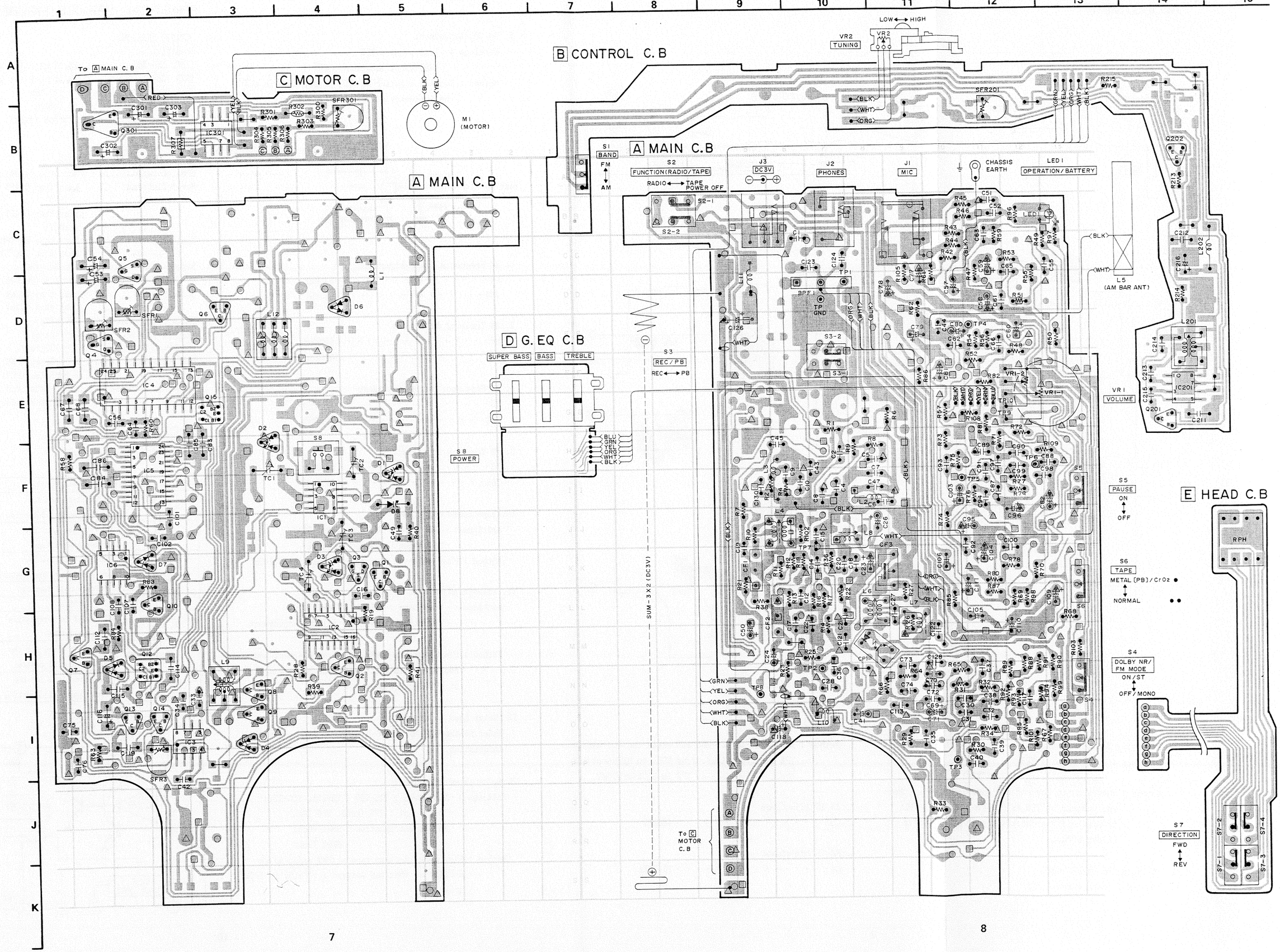
抵抗値
Value of resistor

チップ抵抗
Chip resistor

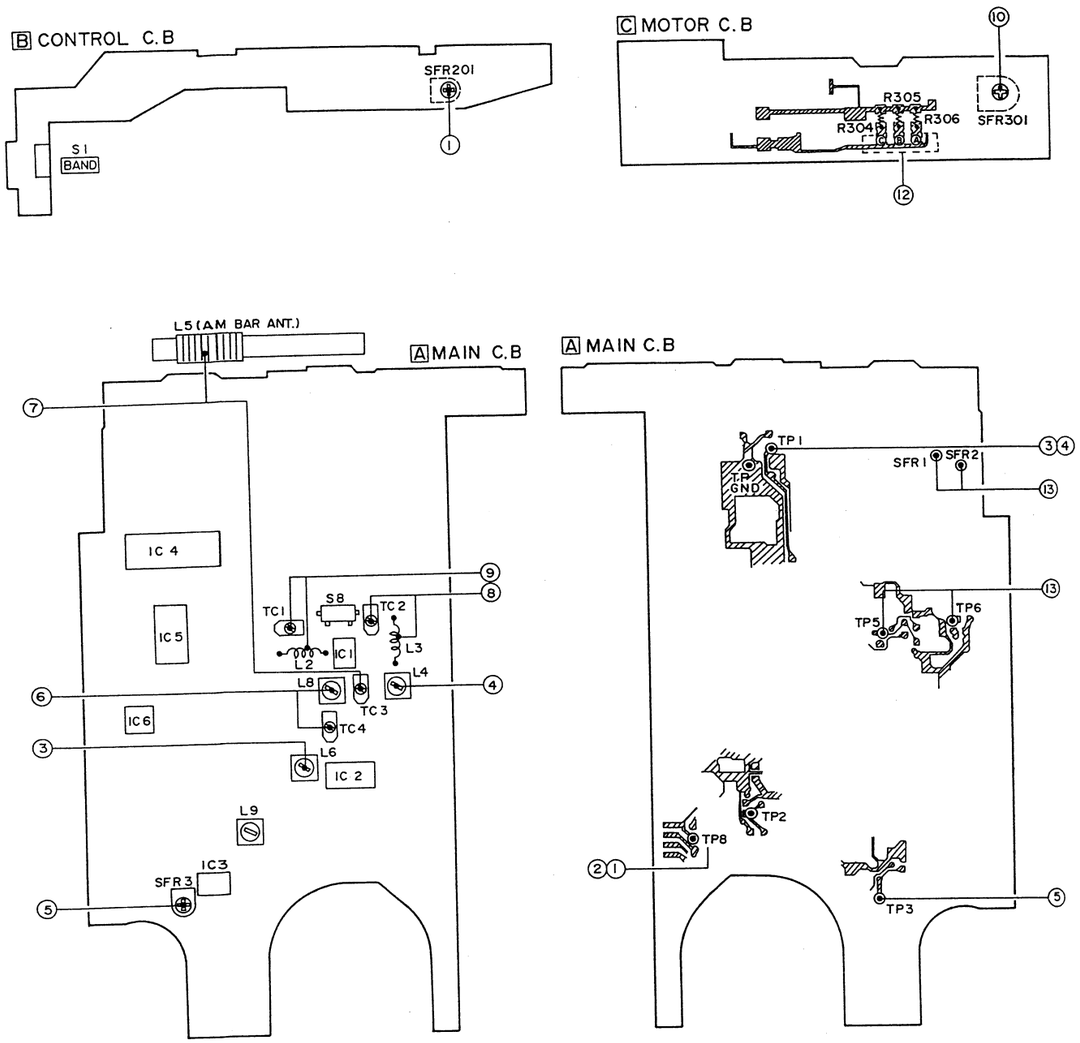
Wattage 容量	Type 種類	Tolerance 許容誤差	Symbol 記号	Dimensions／寸法(mm) Form/外形	L	W	t	Resistor Code : A 抵抗コード : A
1/32W	1608	±5%	CJ		1.6	0.8	0.35	108
1/10W	2125	±5%	CJ		2	1.25	1.45	118
1/8W	3216	±5%	CJ		3.2	1.6	0.5 ～0.7	128

SCHEMATIC DIAGRAM




C MOTOR C.B
To A MAIN C.B
M1 (MOTOR)
A MAIN C.B
B CONTROL C.B
D G.EQ C.B
SUPER BASS
BASS
TREBLE
S8 POWER
S1 BAND
FM
AM
S2 FUNCTION(RADIO/TAPE)
RADIO ↔ TAPE
POWER OFF
S3 REC/PB
REC ↔ PB
J3 DC3V
J2 PHONES
J1 MIC
CHASSIS EARTH
LED1 OPERATION/BATTERY
VR2 TUNING
LOW ↔ HIGH
L5 (AM BAR ANT)
VR1 VOLUME
SUM-3X2(DC3V)
To C MOTOR C.B
E HEAD C.B
S5 PAUSE
ON
OFF
S6 TAPE
METAL (PB) / CrO2
NORMAL
S4 DOLBY NR/FM MODE
ON/ST
OFF/MONO
S7 DIRECTION
FWD
REV
RPH

ADJUSTMENT



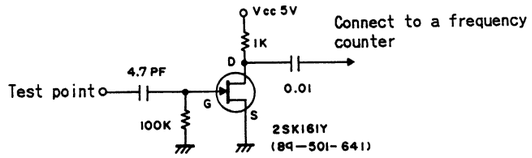
1. FM Tuning Voltage Adjustment
   Settings : · Test point : TP8
   · Adjustment location : SFR201
   Method : Tune VOL. to Low-end and adjust SFR201 so that the voltage at TP8 is 0.36V±10mV. Tune VOL. to High-end and check the voltage at TP8 is 9.76V±500mV.

2. AM Tuning Voltage Check
   Setting : · Test point : TP8
   Method : Tune VOL. to Low-end and check the voltage at TP8 is 0.73V±10mV. Tune VOL. to High-end and check the voltage at TP8 is 9.78V±500mV.

3. AM IF Adjustment
   L6 · · · · · · · · · · · · · · · · · 468kHz

4. FM IF Adjustment
   L4 · · · · · · · · · · · · · · · · · 10.7MHz

5. FM VCO Adjustment
   Settings : · Test point : TP3
   · Adjustment location : SFR3
   Method : Connect a buffer to TP3. Adjust SFR3 so that the frequency at TP3 is 76kHz±40Hz.



6. AM Frequency Range Adjustment
   L8 · · · · · · · · · · · · · · · · · 520kHz
   TC4 · · · · · · · · · · · · · · · · · 1635kHz

7. AM Tracking Adjustment
   L5 · · · · · · · · · · · · · · · · · 600kHz
   TC3 · · · · · · · · · · · · · · · · · 1400kHz

8. FM Frequency Range Adjustment
   L3 · · · · · · · · · · · · · · · · · 87.4MHz
   TC2 · · · · · · · · · · · · · · · · · 108.3MHz

9. FM Tracking Adjustment
   L2 · · · · · · · · · · · · · · · · · 88.0MHz
   TC1 · · · · · · · · · · · · · · · · · 108.0MHz

10. Tape Speed Adjustment
    Settings : · Test tape : TTA-100 (TTA-111S)
    · Adjustment location : SFR301
    Method : Play back the test tape, adjust for 3000Hz.

11. Azimuth Adjustment
    Settings : · Test tape : TTS-310 (TTA-317E)
    · Adjustment location : Azimuth adjustment screw
    Method : Play back the 10kHz signal of the test tape, and adjust so that the output becomes maximum at FWD and REV mode.

12. Motor Load Adjustment
    Refer to the REF No. SI-88-037-OP of service technical information.

13. Dolby Level Adjustment
    Settings : · Test tape : TTS-200 (TTA-161, TCC-130)
    · Test point : TP5 (Lch), TP6 (Rch)
    · Adjustment location : SFR1 (Lch)
    SFR2 (Rch)
    Method : Play back the test tape at FWD mode. Adjust SFR1(2) so that the voltage at TP5(6) is 100mV ±5mV.

PRACTICAL SERVICE FIGURE

〈RADIO SECTION〉

Sensitivity :	
(IHF, THD 3%)	FM 17±4dB (at 98MHz)
(S/N 10dB)	AM 53±3dB (at 1000kHz)
Intermediate frequency :	FM 10.7MHz
	AM 468kHz
FM stereo separation :	17±5dB (1kHz)

〈TAPE SECTION〉

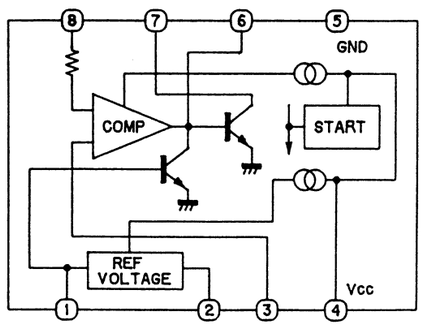
Record bias frequency :	52kHz
Erasing ratio :	More than 48dB
Wow & flutter :	Less than 0.45% (RMS) (FWD)
	Less than 0.48% (RMS) (REV)
Distortion :	Less than 3% (PB)
	Less than 10% (REC)
Signal noise ratio :	47±3dB (PB)
	30±8dB (REC/PB)
Noise level :	Less than 0.2mV (DC MIN. PB)
	Less than 0.2mV (AC MIN. PB)
Pinch roller pressure :	160±10g
Take up torque :	25~40g-cm
FF/rewind torque :	70~120g-cm
Back tension :	2~3.5g-cm (FWD)
	2.5±1g-cm (REV)
Frequency response :	63Hz~8kHz±4dB (NORMAL)
	63Hz~10kHz±4dB (CrO_2, METAL)

IC DESCRIPTION

I C, AN6612S

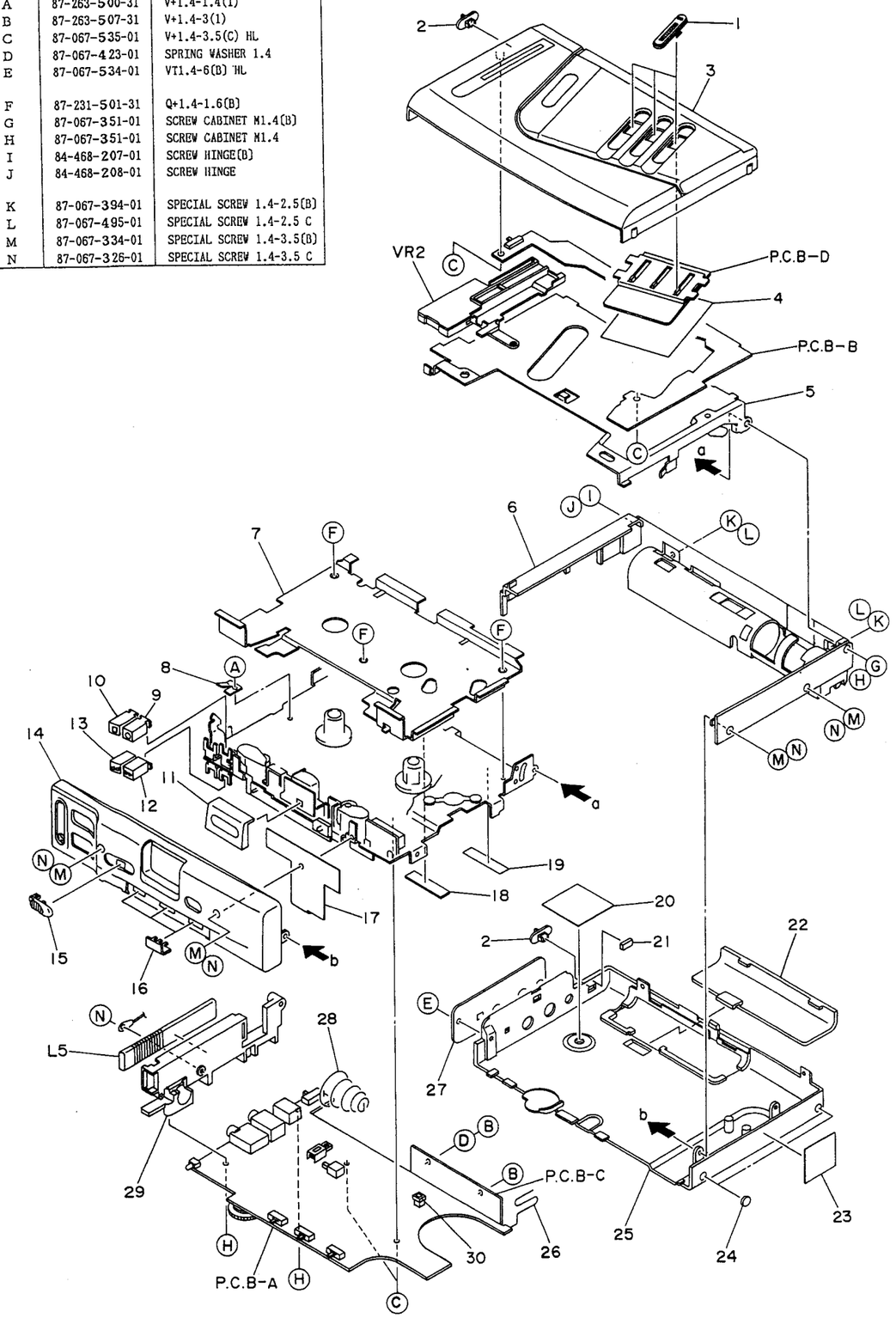
Pin No.	Pin Name	Description
1	VRN	Input terminal for motor current detection
2	VRP	Output terminal for reference voltage
3	VIN	Output terminal for reference voltage control
4	VCC	Power supply terminal
5	GND	GND terminal
6	VB	Terminal for prevention of oscillation
7	VBO	Output terminal for the motor speed of control
8	VM	Input terminal for the motor speed of detection

I C, AN6612S



EXPLODED VIEW – 1

REF.NO.	PART NO.	DESCRIPTION
A	87-263-500-31	V+1.4-1.4(1)
B	87-263-507-31	V+1.4-3(1)
C	87-067-535-01	V+1.4-3.5(C) HL
D	87-067-423-01	SPRING WASHER 1.4
E	87-067-534-01	VT1.4-6(B) HL
F	87-231-501-31	Q+1.4-1.6(B)
G	87-067-351-01	SCREW CABINET M1.4(B)
H	87-067-351-01	SCREW CABINET M1.4
I	84-468-207-01	SCREW HINGE(B)
J	84-468-208-01	SCREW HINGE
K	87-067-394-01	SPECIAL SCREW 1.4-2.5(B)
L	87-067-495-01	SPECIAL SCREW 1.4-2.5 C
M	87-067-334-01	SPECIAL SCREW 1.4-3.5(B)
N	87-067-326-01	SPECIAL SCREW 1.4-3.5 C

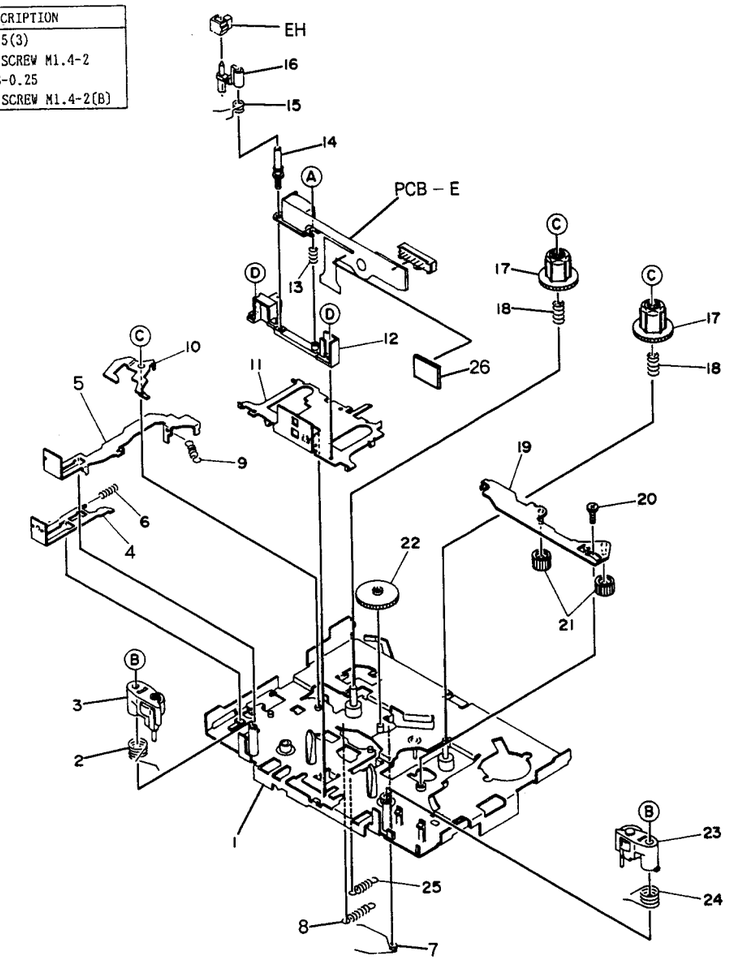


MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1-1	★84-524-009-019	KNOB,GE B	*	3
	1-2	★84-468-045-019	KNOB,SLIDE A(B)		2
	1-2	★84-526-032-019	KNOB,SLIDE A(S)		2
	1-3	★09-027-763-010	LID,CASSETTE ASSY(B)	*	1
	1-3	★09-027-764-010	LID,CASSETTE ASSY(S)	*	1
	1-4	84-498-204-010	INSULATION SHEET EQ		1
	1-5	★84-524-202-019	HOLDER ASSY,CASSETTE	*	1
	1-6	★84-526-012-019	FRAME,CENTER(B)		1
	1-6	★84-526-027-019	FRAME,CENTER(S)		1
	1-7	★84-498-018-019	PLATE,DECORATIVE CASSETTE		1
	1-8	★84-463-209-010	P-SPRING,POP UP		1
	1-9	★84-524-024-010	BUTTON,REC(B)	*	1
	1-9	★84-524-028-010	BUTTON,REC(S)	*	1
	1-10	★84-524-021-010	BUTTON,STOP(B)	*	1
	1-10	★84-524-025-010	BUTTON,STOP(S)	*	1
	1-11	★84-526-006-019	BUTTON,PLAY(B)		1
	1-11	★84-526-021-019	BUTTON,PLAY(S)		1
	1-12	★84-524-022-010	BUTTON,FF(B)	*	1
	1-12	★84-524-026-010	BUTTON,FF(S)	*	1
	1-13	★84-524-023-010	BUTTON,REW(B)	*	1
	1-13	★84-524-027-010	BUTTON,REW(S)	*	1
	1-14	★84-526-005-019	PANEL,CONTROL(B)		1
	1-14	★84-526-020-019	PANEL,CONTROL(S)		1
	1-15	★84-468-051-019	KNOB,SLIDE DIR(B)		1
	1-15	★84-526-029-019	KNOB,SLIDE DIR(S)		1
	1-16	★84-526-007-019	KNOB,SLIDE B(B)		3
	1-16	★84-526-022-019	KNOB,SLIDE B(S)		3
	1-17	82-468-627-210	SHIELD SHEET HEAD		1
	1-18	★84-468-212-019	MYLAR 20X6		1
	1-19	★82-681-239-110	HIMELON 5-20		1
	1-20	★84-400-609-019	SHEET INSULATION B		1
	1-21	★84-468-213-019	G CUSHION 5X3X2		1
	1-22	84-524-007-019	LID,BATTERY(B)	*	1
	1-22	84-526-031-019	LID,BATTERY(S)		1
	1-23	---	LABEL,DBP,PT		1
	1-24	84-448-010-010	FOOT RUBBER		2
	1-25	★84-524-006-019	CABINET ASSY,REAR(B)(J45YN,Y1,YZ)	*	1
	1-25	★84-524-017-019	CABINET ASSY,REAR(B)(J45YJ)	*	1
	1-25	★84-524-014-019	CABINET ASSY,REAR(B)(J320YU)	*	1
	1-25	★84-524-011-019	CABINET ASSY,REAR(S)(J45YN,YZ)	*	1
	1-25	★84-524-019-019	CABINET ASSY,REAR(S)(J45YJ)	*	1
	1-26	★84-468-209-019	BATTERY TERMINAL		1
	1-27	★84-524-008-019	PLATE,SIDE(B)	*	1
	1-27	★84-524-013-019	PLATE,SIDE(S)	*	1
	1-28	★84-468-210-119	C-SPRING,BATTERY		1
	1-29	★84-468-203-019	HOLDER,ANT		1
	1-30	★84-468-206-019	HOLDER,SENSOR		1

EXPLODED VIEW — 2

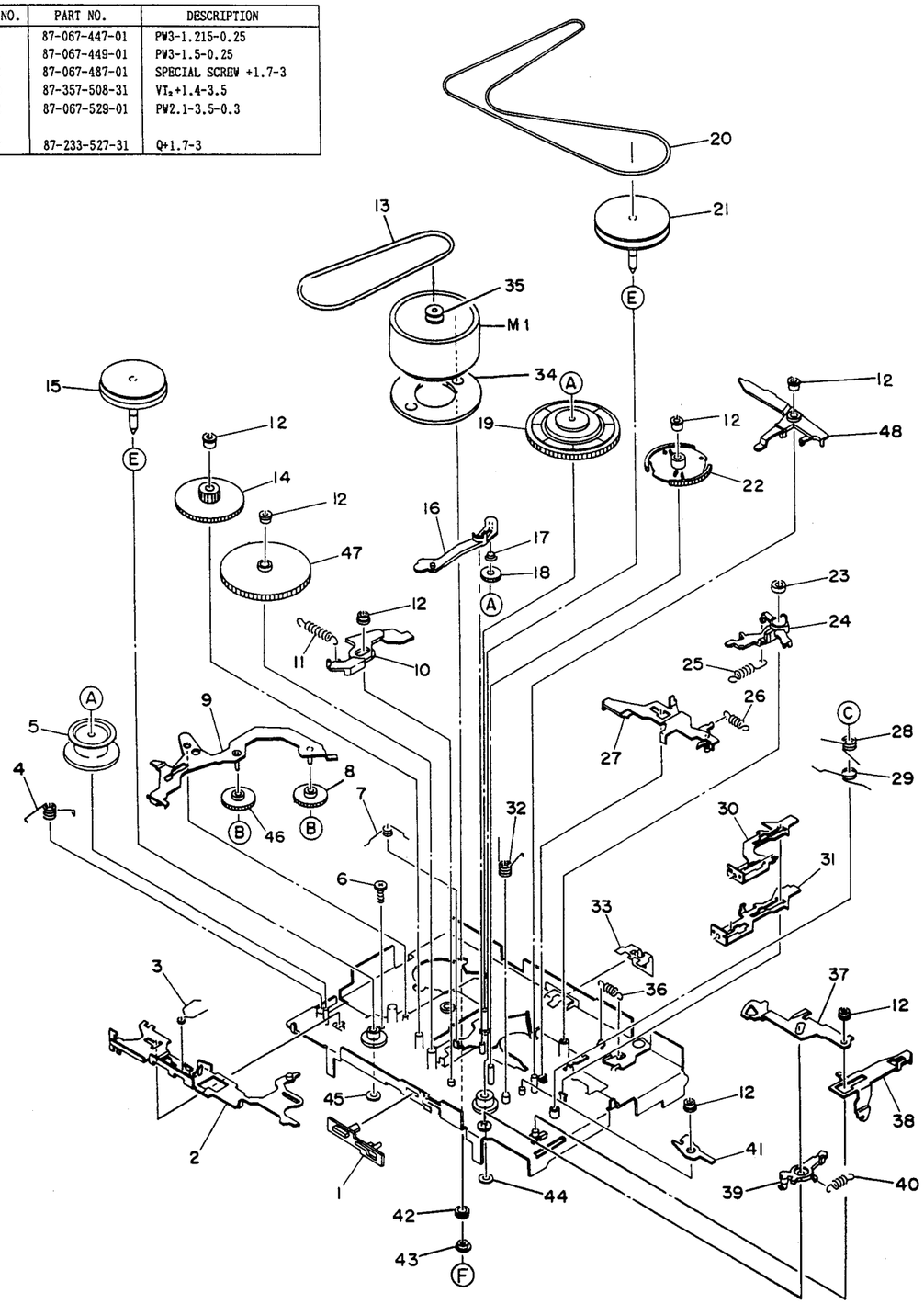
REF.NO.	PART NO.	DESCRIPTION
A	87-268-512-31	V+ 1.4-5.5(3)
B	87-067-517-01	SPECIAL SCREW M1.4-2
C	87-067-516-01	PW3-1.58-0.25
D	87-067-511-01	SPECIAL SCREW M1.4-2(B)



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	2-1	★86-541-502-110	OUTSERT CHASSIS ASSY AR		1
	2-2	★86-541-338-010	T-SPRING,PINCH R P		1
	2-3	86-541-218-010	PINCH LEVER R ASSY		1
	2-4	★86-556-255-110	PLATE,STOP		1
	2-5	★86-541-496-010	PLATE,REC A		1
	2-6	★86-541-329-019	C-SPRING,STOP		1
	2-7	★86-541-347-110	T-SPRING,FR LEVER		1
	2-8	★86-541-336-010	E-SPRING,REC		1
	2-9	★86-541-312-110	E-SPRING,REC LOCK		1
	2-10	★86-541-277-110	LEVER,REC LOCK		1
	2-11	★86-541-270-710	CHASSIS,SLIDE A		1
	2-12	★86-541-283-110	TAPE GUIDE		1
	2-13	★86-541-318-110	C-SPRING,AZIMUTH		1
	2-14	★86-541-369-010	SCREW EH M1.4		1
	2-15	★86-541-344-010	T-SPRING,EH LEVER		1
	2-16	★86-541-287-010	LEVER EH		1
	2-17	★86-541-236-010	GEAR,REEL PLATFORM		2
	2-18	★86-541-328-019	C-SPRING,REEL PLATFORM		2
	2-19	★86-541-221-310	PLATE FR ASSY		1
	2-20	★86-541-383-010	SCREW FR		1
	2-21	★86-541-244-010	GEAR,FR		2
	2-22	★86-541-239-010	GEAR,REW		1
	2-23	86-541-216-110	PINCH LEVER F ASSY		1
	2-24	★86-541-314-010	T-SPRING,PINCH F R		1
	2-25	★86-541-331-010	E-SPRING,ACTUATING		1
	2-26	★86-541-434-010	MYLAR FLEXIBLE A		1

EXPLODED VIEW — 3

REF.NO.	PART NO.	DESCRIPTION
A	87-067-447-01	PW3-1.215-0.25
B	87-067-449-01	PW3-1.5-0.25
C	87-067-487-01	SPECIAL SCREW +1.7-3
D	87-357-508-31	VT$_2$+1.4-3.5
E	87-067-529-01	PW2.1-3.5-0.3
F	87-233-527-31	Q+1.7-3



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	3-1	★84-498-017-019	KNOB,SLIDE MODE		1
	3-2	★86-541-222-410	PLATE,PINCH SELECT ASSY		1
	3-3	★86-541-320-610	T-SPRING,PLAY LEVER		1
	3-4	★86-541-313-010	T-SPRING,PINCH SELECT		1
	3-5	86-541-231-010	PULLEY RELAY A		1
	3-6	★86-541-423-010	SCREW,PLAY		1
	3-7	★86-541-334-110	T-SPRING,AUTO LEVER		1
	3-8	★86-541-242-210	GEAR,PLAY		1
	3-9	★86-541-479-110	LEVER,PLAY ASSY M		1
	3-10	★86-541-288-410	LEVER,MODE SELECT		1
	3-11	★86-541-341-010	E-SPRING,MODE SELECT		1
	3-12	86-541-376-010	COLLAR,PW-BOARD P		7
	3-13	86-541-370-010	BELT A2		1
	3-14	86-541-240-010	GEAR,SLOW-DOWN		1
	3-15	86-541-401-310	FLYWHEEL ASSY FE		1
	3-16	★86-541-285-110	LEVER,AUTO		1
	3-17	★86-541-325-010	C-SPRING,AUTO GEAR		1
	3-18	★86-541-241-010	GEAR,AUTO		1
	3-19	86-541-206-010	GEAR,CLUTCH ASSY		1
	3-20	86-541-368-010	BELT A1		1
	3-21	86-541-402-110	FLYWHEEL ASSY PA		1
	3-22	★86-541-238-510	GEAR,SELECT CAM R		1
	3-23	★84-462-208-010	SPACER,BOSS		1
	3-24	★86-541-292-210	LEVER,REC EJECT AR		1
	3-25	★86-541-297-010	E-SPRING,REC EJECT		1
	3-26	★86-541-332-010	E-SPRING,PLATE LOCK		1
	3-27	★86-541-461-110	PLATE,EJECT ASSY AN		1
	3-28	★86-541-349-010	T-SPRING,FR BUTTON		1
	3-29	★86-541-339-010	T-SPRING,TRIGGER		1
	3-30	★84-541-495-010	PLATE,REW		1
	3-31	★86-541-494-010	PLATE,FF		1
	3-32	★86-541-345-110	T-SPRING,SELECT CAM		1
	3-33	★86-541-323-010	P-SPRING,CASSETTE SUPPORT		1
	3-34	★87-038-078-010	SHIELD PLATE		1
	3-35	86-541-442-010	MOTOR PULLEY A3		1
	3-36	★86-541-330-019	E-SPRING,REC BLOCKING		1
	3-37	★86-541-278-310	LEVER,EH RESET		1
	3-38	★86-541-263-210	PLATE,EJECT		1
	3-39	★86-541-286-010	LEVER,DIRECTION		1
	3-40	★86-541-343-010	E-SPRING,DIRECTION		1
	3-41	★86-541-293-110	LEVER,TRIGGER LOCK		1
	3-42	★86-541-447-010	G CUSHION,MOTOR W		2
	3-43	★86-541-443-010	COLLAR,MOTOR A		2
	3-44	★86-034-739-019	SOMA SHEET 1.63-3.2-0.3		1
	3-45	★87-067-555-010	SOMA SHEET 3-1.5-0.3		1
	3-46	★86-541-477-110	GEAR,PLAY M		1
	3-47	★86-541-237-010	GEAR,AUTO CAM		1
	3-48	★86-541-284-310	LEVER,TRIGGER		1
		★09-027-568-010	COLLAR PW-BOARD (PJ) KIT		1

■ ACCESSORIES/PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q, TY
	1	★84-524-901-019	INSTRUCTION BOOKLET,Y	*	1
	2	87-041-056-010	MIC,CM-S20		1
	3	87-048-153-019	HP-M16(Y,YU,YZ)		1
	4	87-048-167-019	HP-22 BK(Y1)		1
	5	★87-080-025-019	CLIP BELT ASSY		1